

## DEVELOPMENT OF THE CHARADES GAME AS A LEARNING MEDIA IN HYDROCARBON TOPIC

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### Abstrak

Penelitian ini bertujuan untuk mengetahui kelayakan permainan Tebak Kata sebagai media pembelajaran pada materi pokok Hidrokarbon. Kelayakan permainan Tebak Kata sebagai media pembelajaran ditinjau dari tiga aspek yaitu validitas, efektivitas, dan kepraktisan. Jenis penelitian ini adalah *Research and Development* (R&D), yaitu meneliti dan mengembangkan media pembelajaran berupa permainan Tebak Kata untuk materi hidrokarbon. Uji coba dilakukan kepada siswa kelas XI MIA 2 SMA AL-HIKAM Bangkalan dengan menggunakan sistem *one group pretest-posttest design*. Instrumen yang digunakan dalam penelitian ini adalah lembar angket pengumpulan data prapenelitian, lembar validasi, lembar tes hasil belajar siswa (*pretest-posttest*), dan lembar angket respon pengguna. Berdasarkan data hasil validasi, persentase validitas permainan Tebak Kata sebagai media pembelajaran adalah 83.80%. Efektivitas permainan Tebak Kata sebagai media pembelajaran ditinjau dari ketuntasan hasil belajar memiliki persentase ketuntasan klasikal sebesar 87.50% dan ditinjau dari peningkatan hasil belajar, memiliki persentase sebesar 91.67%. Kepraktisan permainan Tebak Kata sebagai media pembelajaran berdasarkan data hasil angket respon siswa memiliki persentase sebesar 92.26%. Dengan demikian permainan Tebak Kata dinyatakan layak sebagai media pembelajaran.

**Kata Kunci:** Permainan Tebak Kata, Hidrokarbon, Kelayakan

### Abstract

*The aim of this study is to determine the feasibility of Charades game as a learning media in the Hydrocarbon topic. The feasibility of Charades game as a learning media in terms of three aspects which are the validity, the effectiveness, and the practicality. Type of this study is the Research and Development (R&D), which is researching and developing learning media in the form of Charades game in the Hydrocarbon topic. The instruments used in this study are a pre research questionnaire sheet, validation sheet, student achievement (pretest-posttest) sheet, and student response questionnaire sheet. Based on data validation, the validity percentage of Charades game as a learning media is 83.80%. The effectiveness percentage of Charades game as a learning media in terms of classical learning outcomes completeness is 87.50% and for learning outcomes improvement is 91.67%. The practicality percentage of Charades game as a learning media based on student questionnaire responses is 92.26%. From those percentages, Charades game is proper to be used as a learning media in Hydrocarbon topic.*

**Keywords:** The Charades game, Hydrocarbons, Feasibility

## INTRODUCTION

Education is a major component of a nation's progress. The successful development of a nation in the future can be seen from how education is capable in forming qualified human resources. The curriculum is the world heart of education, the curriculum for the future need to be designed and refined to improve the quality of national education and improve the quality of Indonesian human resources [1].

Curriculum 2013 requires an increase and balance of soft skills and hard skills that include aspects of competence attitudes, skills and knowledge. Students who learn mean use and improve cognitive, affective, and psychomotor. Student learning outcomes can be affected by several things, in addition to the basic capabilities of the students is also influenced by the motivation and a way of teaching that is done by the teacher also the motivation to learn.

Boredom and forgetting often occurs in a study, based on everyday experience, we have the impression that what we have experienced and we learned not entirely stored in our brain memory.. Meanwhile, according to the cognitive theory, anything we have experienced and we learn will be stored in brain permanent memory subsystem when the brain process them properly. Therefore, the repeated exercise could minimize the loss of information in the our brain memory [2].

Based on the interviews data with one of the high school chemistry teacher in AL-HIKAM Senior High School, many students who have difficulty in the alkanes, alkenes and alkynes nomenclature. This is evident from the low value of students daily tests, with the average score get still not reach the standards score. In Ghana, students' understanding of the structure and

nomenclature of organic compounds including hydrocarbons is very low [3].

Based on the results of the data collected in AL-HIKAM Senior High School in Bangkalan, as many as 50% of students from 24 students say that chemistry lesson is difficult, especially on the nomenclature of hydrocarbons as much as 66% of students had difficulty. Most of the students reasoned because the material is confusing. About 79% of students from 24 students in class XI MIA 1 AL-HIKAM Senior High School in Bangkalan were not motivated to learn and practice as long as they only use the worksheets in exercises.

Boredom while student do exercises can caused students become lazy, therefore anything less interest students in learning needs to be packaged into something fun [4]. As a learning media, the game has several advantages, the game is something fun to do, something that is entertaining and interesting [5].

Currently, an event in one of the television station in Indonesia, Eat Bulaga, tend to be a favorite channel, especially among teenagers and children even quizzes or games which is the development of charades that has become a trend in the day-to-day communication. The Charades game has a lot of activities where students interact and engage directly in the game so it can practice the students social skills. Moreover, in an element of observing, communicating, associates, and concluded that the Charades game can stimulate aspects emphasized in the curriculum of 2013.

Based on the sentences above, it is necessary to develop a game that can be used as a learning media to overcome the student difficulties in chemistry, especially Hydrocarbons topic. The Charades game is developed as a learning media in Hydrocarbon topic because the game

characteristic is appropriate if applied in the Hydrocarbons topic. The Charades game characteristic is practice repeatedly by connecting several informations as the answer of the given problem. While Hydrocarbons topic, especially hydrocarbons nomenclature takes repeated practice for better understanding.

## METHOD

Type of this research is Research and Development (R & D), which is researching and developing a learning media in the form of Charades game for hydrocarbon topic. The aim of this study is to determine the feasibility of the Charades game as a learning media. The feasibility of charades game as a learning media in terms of three aspects: the validity, the effectiveness and the practicality [6].

The instruments used in this study are (1) validation sheet, (2) pretest-posttest sheet, and (3) The student's response sheet. The collecting data methods used in this study are a questionnaire and tests.

The charades game validity as a learning media include aspects of content validity and construct validity. The Charades game is validated by two chemistry lecturers and a chemistry teacher. Then the data is calculated by using this following formula [7].

$$\text{validity percentage} = \frac{\text{total score}}{\text{criterion score}} \times 100\%$$

Criterion score = the highest for each item x total item x total respondent

The charades game validity that is gotten from the validity sheet is achieved if the validity percentage  $\geq 61\%$  with score interpretation as follow [8].

Table 1 Score Interpretation

Percentage	Category
0% - 20%	Very less
21% - 40%	Less
41% - 60%	Enough
61% - 80%	Good
81% - 100%	Very good

[8]

The Charades game effectiveness as a learning media in terms of student learning outcomes. The student learning outcomes include the mastery learning (completeness) and the improvement student learning outcomes.

Classical completeness is achieved if 85% or more students received posttest score  $\geq 3$ . classical completeness can be calculated by using this following formula [7].

$$\text{Classical completeness percenta} = \frac{\text{total completeness students}}{\text{total students}} \times 100\%$$

Mastery learning students have achieved if the value obtained  $\geq 3$ . Pretest and posttest score were analyzed by using this following formula [7].

$$\text{Student score} = \frac{\text{total of right answer}}{\text{total question}} \times 4$$

The improvement learning outcomes are measured from the pretest and posttest score, it is said to be increased if the n-Gain  $\geq 0.3$  which are obtained by using the following formula [9].

$$n\text{-gain} = \frac{(\% \text{ posttest} - \% \text{ pretest})}{(\% 100 - \% \text{ pretest})}$$

$$\% \text{ posttest} = \frac{\text{nilai posttest}}{\text{nilai max.posttest}} \times 100\%$$

$$\%pretest = \frac{\text{nilai pretest}}{\text{nilai max.pretest}} \times 100\%$$

The Charades game is effective by improving student learning outcomes if  $\geq 61\%$  of students increased learning outcomes. The percentage can be calculated by using the following formula [7].

$$\% \text{increasing learning outcome} = \frac{\text{students who have increasing learning outcome}}{\text{total students}} \times 100\%$$

The practical of Charades game as a learning media stated if the results of student questionnaire responses have a percentage  $\geq 61\%$ . The student response sheet includes the ease of media usage and media flexibility analyzed by Guttman scale in the table below [8].

Table 2 Guttman Scale

Answer	Score
Yes	1
No	0

[8]

Then it is calculated by using the following formula [7].

$$\text{Practicality percentage} = \frac{\text{total score}}{\text{criterion score}} \times 100\%$$

Criterion score = the highest for each item x total item x total respondent

## RESULT AND DISCUSSION

The result of this study includes the validity, the effectiveness, and the practicality of the charades game as a learning media in hydrocarbon topic.

## Validity

Results of the validation of third validator can be seen in the following table.

Table 3 Validation Data

Criterion	%
The topic truth	80.00
The question in game suitability with the learning objectives.	80.00
The pretest-posttest question suitability with the learning objectives	73.33
<b>Content Validity</b>	<b>77.77</b>
The question in game	78.89
The pretest-posttest question	76.00
The Charades game ability in practice honesty, discipline, and fair	90.00
The educational aspects in the Charades game	82.67
<b>Construct Validity</b>	<b>84.81</b>

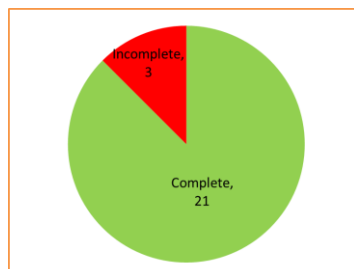
The content validity percentage which includes the topic truth and the suitability with the learning aims is 77.77% with good criterion or valid [8]. For construct validity percentage which includes the suitability questions used in the game, the suitability of the pretest-posttest sheet, the Charades game ability in practice honesty, discipline, and fair, and educational aspects that can be increased in the use of the Charades game as a learning media is 84.81% with excellent/very valid criterion [8].

The percentage of Charades game validity as a learning media is 83.80% with excellent/very valid criterion [8]. Thus, the Charades is proper to be used as a learning media in Hydrocarbons topic.

## Effectiveness

The Charades game effectiveness as a learning media in terms of student the mastery learning and the improvement learning outcome. The student mastery

learning based on posttest score can be seen in the following picture.



Picture 1 the completeness of students learning outcome

Based on the student posttest data after playing Charades game, showed that 21 students from 24 students are complete. Students who are incomplete in this study were student 4, student 11, and student 16. Student 4 posttest scored 2.8 the data showed that the student learning outcomes has increased but incomplete. It can be connected with the results of the student questionnaire response whereby student 4 states that the topic used in the Charades game is not easy to understand, but the student 4 states interested in studying chemistry using the game so that he has increasing learning outcomes. In addition, the cognitive ability of the student 4 is low based on pretest score which is 1.2. The prior knowledge of the students will affect their ability in the information processing [10].

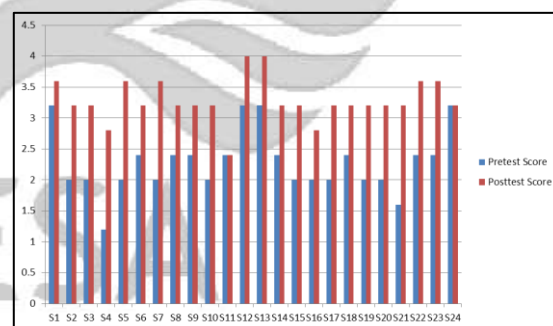
Student 11 has posttest score 2.4 the data showed that student 11 is incomplete. It can be connected with the result of the student questionnaire response whereby student 11 states that the topic used in the Charades game is not easy to understand so that such information can't be well received by student 11 that ultimately have an impact on the student learning outcomes.

Student 16 has posttest score 2.8 the data showed that student 16 is incomplete. It can be connected with the results of the student questionnaire responses whereby

student 16 states that the topic used in the Charades game is not easy to understand. This causes the information submitted in the game activity not be well received by the student, which then affects the posttest score. However, student 16 states that he is interested in studying chemistry by using the Charades game so that he has increasing learning outcomes.

The classical completeness percentage based on posttest data in class XI MIA 2 of ALHIKAM Senior High School in Bangkalan is 87.50%. A class achieved a classical completeness if  $\geq 85\%$  of students who have completed their study in a class [7]. So the classical completeness for class XI MIA 2 of AL-HIKAM Senior High School in Bangkalan has been achieved. A Good learning media is a media that can achieve the learning objectives, and thus the Charades game is effective to be used as a learning media by the completeness of student learning outcomes [11].

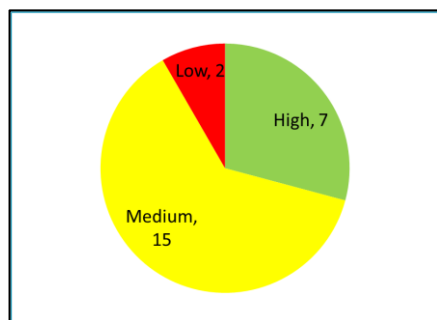
The increasing learning outcome is shown by the increasing of the pretest to the posttest score. The student pretest and posttest score is shown in the figure below.



Picture 2 student pretest and posttest data

The student increasing learning outcome is different from each student. It is divided into three categories that can be seen in the picture bellow.





Picture 3 students increasing learning outcomes based on the categories

Based on the student pretest and posttest data, as many as two students don't have increasing learning outcome, it can be connected to the results of student questionnaire responses. Students who didn't have increasing learning outcomes are student 11 and 24. Based on the results of the student questionnaire responses, student 11 and student 24 state that they are not interested in studying chemistry by using a game where not all of the students expressed interest and do not like to use the game in learning chemistry.

The information received by the students will be quickly processed if they are happy learning and like what they learn, thus the students' lack of interest in the media usage will affect their learning outcomes. Based on the study data, 15 students have increasing learning outcomes with medium criterion, and 7 students have increasing learning outcomes with high criterion. Criteria increase experienced by each student is not the same because every students has their own ability to process the information they get[10].

Based on the student pretest and posttest data, 22 students have increasing learning outcomes, in other words the percentage of classical increasing of student learning outcomes is 91.67%. Based on the learning outcome, the Charades game is effective to be used as a learning media. The game can help

students understand the topic being taught [12]. The game has fun characteristic so as to overcome the boredom that occurs at the time the students learn so that they can create a conducive learning and the topic being taught can be well processed by the students [10].

### Practicality

The practicality of the Charades game as a learning media is determined by the student questionnaire response. The student questionnaire response data can be seen in the table below.

Table 4 student questionnaire response

Aspect	Percentage (%)
The language clarity	87.50
The ease of the game usage	91.67
The media's ability to motivate student learning	97.22

Based on the results of the student as a user response, the practicality percentage of the Charades game as a learning media in the aspect of language clarity is 87.50%. Media is an intermediary that serves to convey information so that the language used must be easily understood and clearly presented so that the information can be well received [11]. Based on these data the Charades game is already comply with one of the media that can be used in learning.

The ease of game usage aspect has a percentage 91.67%. The percentages indicate that the Charades game has fulfilled one of the requirements as a good learning media, which is flexible and easy to use [4]. The aspect of the media's ability to motivate the student learning has a percentage of 97.22%. A media also must be able to foster a positive attitude towards the topic presented. In other words, it can motivate students to learn [11]. Thus the Charades game has a percentage 92.26%

as a learning media based on the students questionnaire response. It is expressed that the Charades game practically used as a learning media in hydrocarbon topic.

## CLOSURE

### Conclusion

Based on the data analysis in this study can be concluded that the Charades game is proper to be used as a learning media in hydrocarbon topic, with the following details:

1. The Charades game as a learning media in Hydrocarbon topic is valid with percentage validity is 83.94%.
2. The Charades game as a learning media in Hydrocarbon topic is effective with percentage effectiveness for completeness learning outcome is 87.50% and for increasing learning outcome is 91.67%.
3. The Charades game as a learning media in Hydrocarbon topic is practice with percentage practicality is 89.88%.

### Suggestion

With the development of the Charades game as a learning media in Hydrocarbon topic, then here are some suggestions from the author for further study:

1. The study that have been conducted can only achieve one learning objective from some of the learning objectives that exist in Hydrocarbon topic, so that the concept in this game needs to be added.
2. The study carried out took longer time than planned, so as to use the Charades game as a learning media needs a good time management, preparation and a good briefing.
3. The study carried out only until the testing stage therefore it needs to be done on the real implementation, so

that later obtained information regarding the advantages and disadvantages of the Charades game as a learning media.

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